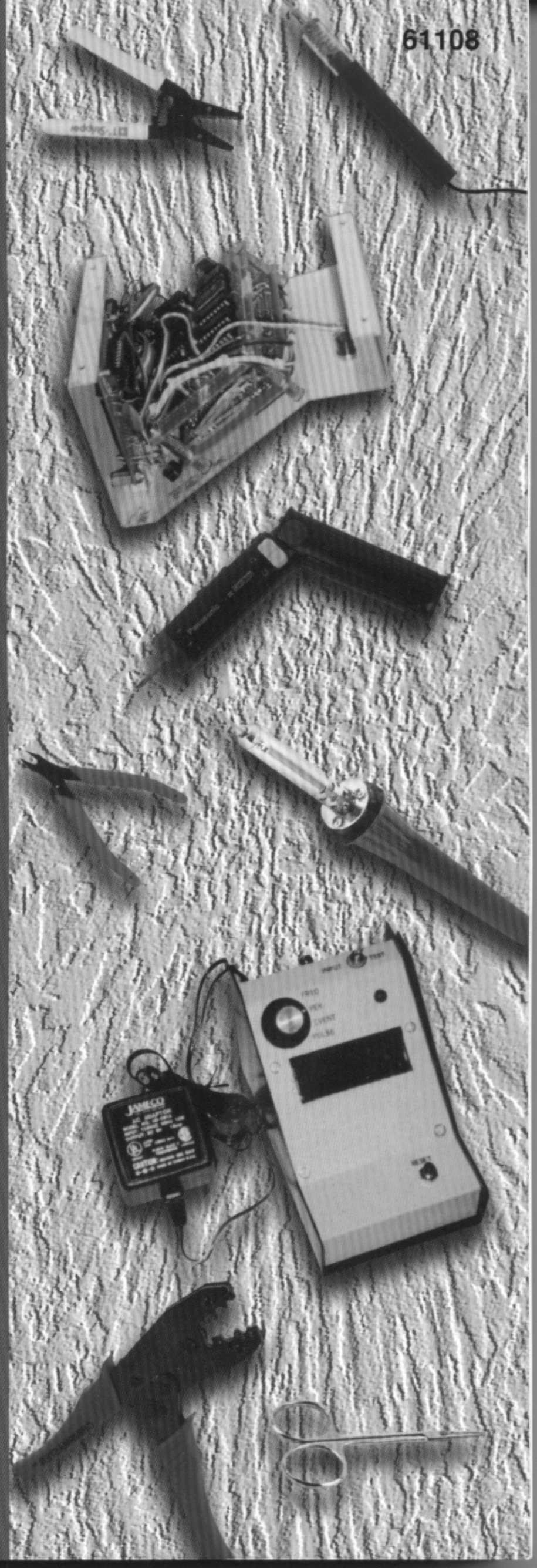
BUILD YOUR OWN HOME LAB

Clement S. Pepper

PROMPT PUBLICATIONS



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FOREWORD

Between the years of 1960 and 1990, my engineering employment was with R & D and one-of-a-kind system developments. It was also in these years that the incredible expansion of solid state technology took place — the transition from simple (so to speak) discretes to the present day integrated circuit devices of almost unbelievable complexity.

I was fortunate in having supportive employers who enabled me to keep abreast of new developments as they became available. The semiconductor manufacturers were very active in promoting their product lines, with seminars and dinner meetings from which I returned with arm loads of the latest data books. I found myself working with cohorts with whom, in our daily contacts, I traded knowledge and experience.

My employers were supportive of continuing education, and over the years I took a number of courses — I obtained a BS in Physics, Electronics Option, from San Diego State University in 1963 while working at the Scripps Institution of Oceanography in La Jolla, California.

Even so, I realized there was no way I could learn all I needed and wanted to know within the confines of my daily work on the job or in long, drawn-out university courses. I would have to find a way to make more use of my own time, for that which could not be done on the job.

Hence the home lab.

In the long run, guess where much of what I put into my job originated?

Simply put, my purpose in preparing this book is to encourage a career in the field of electronics among young men and women. Twenty years ago, the computer captured the attention of many of us in its construction. We

were hobbyists and experimenters with as much interest in the computer's internal parts and functions as with its usage. It is no longer appropriate for most of us as individuals to construct or even attempt to fathom the ins and outs of our own computers from the bare bones. However, the computer is an electronic system. It is within our capability, and to our advantage, to understand the workings of the parts and circuits that comprise the construction and operation of the tools we need, from test equipment to computers. However, first and foremost, this is a book to help with building a career. If we learn how to build the basic tools we need for our home electronics lab, then others will follow.

WHAT'S INSIDE

Chapter 1: A Look Back At the Future

The author indulges in a bit of autobiography. Thoughts on looking ahead from a long-ago vantage point. The young man or woman of today is hopefully viewing his or her own prospects for the future in an increasingly challenging technical world.

Chapter 2: Getting Started

Not a cookbook, this chapter is an initializer for your idea generator. Our home lab will not spring into being at the snap of a clip lead. We need to keep our thoughts on goals — we should think to ourselves, where do *I* want to go and what is *my* best way to get there? What is essential for the here and now, and what can be fitted in as time goes by?

Chapter 3: An Instrumentation Base of Our Own Making

Perhaps it seems a bit odd to have the end result right up front; but why not enjoy the dessert first and use it to hone our appetite for the filler courses? In this chapter are instrument projects we can do for ourselves, complete with circuit descriptions, parts lists, and construction details. Certain to contribute to the functioning of our lab, to say nothing of our satisfaction in achievement.

Chapter 4: Breadboards and Prototype Modules

A number of manufacturers are offering materials that contribute to the ease and efficiency in constructing a working prototype of our project. When we find a recurring need for certain parts or circuits, why not put together basic, reusable modules of them? A bit of time well spent saves more time for when it counts.

Chapter 5: Circuit Data Basics For Us To Build Upon

We can relate this chapter to the menu in our favorite restaurant. It shows the good things to choose from; but to actually taste the reality of it, we have to place an order. Taken to the limit, this chapter could fill several books. The range of devices from simple discrete diodes to more elegant A/D converters will provide the insight on what is most suitable for our project. The devices selected for each of the chapter's four sections are those the author believes to be of general interest. Source references for further information are liberally provided.

Appendices

What it is and where it is to be found: catalogs, databooks, and surplus part sources. These are included with thought for those of us who must rely on the telephone and UPS[1] for much of our information and material needs.

ACKNOWLEDGMENTS

An author does not produce his masterpiece in an isolation cell. Along the trail that begins with the first faltering sentence, to the typing of that one final character, innumerable others are contributing from their backpacks of encouragement, advice and assistance. Many thanks to these individuals.

1. Trademark, United Parcel Service.

$24.95

BUILD YOUR OWN HOME LAB

Learn the Joy of Having Your Own Home Electronics Lab!

For electronics enthusiasts, a home lab is a place where learning can take place. All of the lab details — work space, equipment, parts, library — are necessary for a working facility. With your own home lab, the basics of electronic devices (from A/D converters to computers) become simpler and more accessible, and the world of electronics offers more opportunities for success on both a professional and hobbyist level.

Build Your Own Home Lab shows you how to assemble an efficient working home lab. Learn how to create an ideal lab inexpensively, and how to make it pay its own way through years of growth and use. *Build Your Own Home Lab* includes many projects for creating your own instruments, such as a multichannel oscilloscope switch and a 100-minute timer/stop watch — instruments designed to help you learn more about electronics while you save money by creating them yourself.

Build Your Own Home Lab covers the following information:

- Work Space and Furnishings
- Basic Tools and Instrumentation
- Assembling a Working Library
- Making Your Own Instrumentation
- Breadboarding and Prototype Modules
- Circuit Data Basics
- AND MUCH, MUCH MORE!

Also included are lists of mail and telephone order sources, semiconductor literature sources, and some surplus part sources.

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